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Equality Between the Sexes: Neanderthal Women Joined Men in the Hunt

By NICHOLAS WADE

A new explanation for the demise of the Neanderthals, the stockily built human species that occupied Europe until the arrival of modern humans 45,000 years ago, has been proposed by two anthropologists at the University of Arizona.

Unlike modern humans, who had developed a versatile division of labor between men and women, the entire Neanderthal population seems to have been engaged in a single main occupation, the hunting of large game, the scientists, Steven L. Kuhn and Mary C. Stiner, say in an article posted online yesterday in *Current Anthropology*.

Because modern humans exploited the environment more efficiently, by having men hunt large game and women gather small game and plant foods, their populations would have outgrown those of the Neanderthals.

The Neanderthals endured for about 100,000 years, despite a punishing way of life. They preyed on the large animals that flourished in Europe in the ice age like bison, deer, gazelles and wild horses. But there is no evidence that they knew of bows and arrows. Instead, they used stone-tipped spears.

Hunting large game at close range is perilous, and Neanderthal skeletons bear copious fractures. Dr. Kuhn and Dr. Stiner argue that Neanderthal women and children took part in the dangerous hunts, probably as beaters and blockers of exit routes.

Their argument, necessarily indirect, begins with the human hunter-gatherer societies, almost all of which have a division of labor between the sexes.

At sites occupied by modern humans from 45,000 to 10,000 years ago, a period known as the Upper Paleolithic, there is good evidence of different occupations, from small animal and bird remains, as well as the bone awls and needles used to make clothes. It seems reasonable to assume that these activities were divided between men and women, as is the case with modern foraging peoples.

But Neanderthal sites include no bone needles, no small animal remains and no grinding stones for preparing plant foods. So what did Neanderthal women do all day?

Their skeletons are so robustly built that it seems improbable that they just sat at home looking after the children, the anthropologists write. More likely, they did the same as the men, with the whole population engaged in bringing down large game.

The meat of large animals yields a rich payoff, but even the best hunters have unlucky days. The modern humans of the Upper Paleolithic, with their division of labor and diversified food sources, would have been better able to secure a continuous food supply. Nor were they putting their reproductive core -- women and children -- at great risk.

David Pilbeam, a paleoanthropologist at Harvard, said the Arizona researchers' article was "very stimulating and thoughtful" and seemed to be the first to propose a mechanism for why Neanderthal populations declined.

Dr. Stiner said the division of labor between the sexes was likely to have arisen in a tropical environment. Indeed, it may have provided the demographic impetus for modern humans to expand out of Africa, she said.

A rival hypothesis proposed by Richard Klein of Stanford University holds that some cognitive advance like the perfection of language underlay the burst of innovative behavior shown by Upper Paleolithic people and their predecessors in Africa.

Why did the Neanderthals fail to adapt when modern humans arrived on their doorstep? Under Dr. Klein's hypothesis, the reason is simply that they were cognitively less advanced.

Dr. Stiner said that in her view there was not time for them to change their culture. "Although there may have been differences in neurological wiring," she said, "I think another very important key is the legacy of cultural institutions about social roles." Is there a

genetic basis to the division of labor that emerged in the modern human lineage? "It's equally compelling to argue that most or all of this has a cultural basis," Dr. Stiner said. "That's where it's very difficult for people like us and Richard Klein to resolve the basis of our disagreement."

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